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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,302	02/05/2002	Densen Cao	5061.8A P	1021

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EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,302

Applicant(s)

CAO, DENSEN

Examiner

Marianne L. Padgett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-27 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 19-27 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/05/2005 has been entered.

2. Claims 19-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In independent claims 19 & 24, the preambles, which are directed to "a composite material", are not commensurate in scope with the body of the claims, which may be treating any curable material, composite or not. Changing "a material" to --the composite material-- in the body of the claims would correct this deficiency.

In claim 20, "a longitudinal axis of said heat sink" has no clear meaning, since the heat sink introduced in claim 19 has insufficient structure to necessitate the existence of a longitudinal axis. Furthermore, assuming that an orientation & shape consistent with that of original claim 1 was intended (i.e. an elongated heat sink with the LED at one end), then the claimed "directly in front" would appear to be on the axis, and not included by the claimed range of "about 30 degrees to about 150 degrees", which would be effectively centered in an annular ring perpendicular to the claimed axis. Thus as written, the limitation appears self-contradictory or too lacking in context to clearly determine its intended meaning. If the claimed range was intended to be a range of possible end points for the degree to which the output light radiates to the sides of a "directly in front" central position, that would be more logical, as light from a point source inherently spreads out, with the amount it can do so modified by masking, blocking or collimating means or the like, but it is NOT what is claimed. Note that claiming an inherent ability or

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effect, is hardly patentably significant. Alternately, fig.34c shows an LED module 3409 on a surface parallel to the longitudinal axis of an elongated substrate (3410, undefined, but 3910 which is not illustrated is a heat sink), & fig.31a is similar but with an longitudinal heat sink clearly shown. If this configuration's intended, context to create & necessitate such an orientation is missing from the claims.

3. It is noted that figures 37-38 & [120] are significant to the support of the new claim language.

The examiner notes that references listed on p.1 of 6 of the 2/5/02 & p.8 of 8 of the 8/6/02 IDS's have not been reviewed due to a problem with the legibility of the entries. If applicant wants the references reviewed, they might consider resubmitting a clearer copy of these listings.

4. The disclosure is objected to because of the following informalities: Proof reading is needed, especially for reference numbers being appropriately defined, as for example in [116], where an apparent discrepancy was noted above in section 2.

Appropriate correction is required.

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 19-27 are* provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 5-6, 11-13 & 18 or claims 1-18 of copending Application No. 10/073,823 or 10/072,613, respectively. Although the conflicting claims are not identical, they are not patentably distinct from each other because while the limitations are not identical & introduced in different orders, they are of overlapping scope, that constitutes obvious variations. Also, the (613) claims are to a curing light instead of a curing process, but it would have been obvious to use the light for its intended purpose, especially as the process is merely directed to generic curing of any curable object where the majority of the limitations are to the apparatus used & the necessary effects of its structure & circuits that are common to the apparatus claims. The act of curing has not patentable significance in itself, as it is a conventional generic act. The limitations of (823) & (613) are more detailed than those of the present case, but they encompass the present claim limitations, so are obvious variation.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Among applicant's many copending cases, the following are of interest for having claims concerning LED's, elongated heat sinks & spread of irradiation, but lack limitations concerning the current input & its effect on light output: 10/017,454; 10/017,455; 10/188,449; 10/189,232; 10/189,255; 10/072,635; 10/016,992; PN 6,755,648 B2; 6,783,362 B2; 6,926,524 B2; 6,929,472 B2; & 6,932,600 B2.

8. Ostler et al (6,282,013 B1) was noted to have modulated power & light output, which is synonymous with or overlapping with pulsed, and as seen in Figure 12 & 15-24, plus examples on col.15+, pulsed power, hence is no longer applicable to the claims as amended.

9. Claims 19-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovac et al (WO 99/35995), in view of Kennedy (5,233,283) as applied in section 3 of the paper mailed 5/25/04, or in view of Kennedy et al (5,634,711).

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Applicant's arguments (4/27/05=7/5/05) concerning Kennedy (238)'s pulsed input being to the battery were noted, & in the advisory, it was agreed that pulsed input into the battery would not read on the claims as amended. However, further review of Kennedy (238) shows that charger 20 diagramed in fig.3, has an A.C. input that is transformed to D.C. (col.4, lines 10-68, esp 45-52), but does not actually appear to say it is pulsed DC input from the charger to the battery as essential alleged by applicant. Furthermore, fig.2 shows "the serial of electrical pulse signals supplied to the light lamp by the microprocessor..." col.2, lines 32-35, emphasis added), while the abstract states "a microprocessor which is activated by the battery to provide a series of square wave signals to the light curing lamp such that the light output of the light curing lamp is constant over a select period of time" (emphasis added). Also see col.2, lines 23-27 & 60-col.3, line 30; and in claim 1, col.5, lines 35-42, all of which explicitly discuss pulsed output (square wave) from the battery with the recipient being the light, hence applicants arguments for a different input scenario is not convincing. It is also noted that Kennedy (238), doesn't require the curing light to be any particular type, that the pulsing is regulated to keep the average voltage input constant when the battery's charge begins to decrease, so the light delivered may be kept constant to enable complete curing (i.e. prevent decrease in light output due to dropping voltage). This effect would have been equally important in the LED light curing devices of Kovac (WO), which are used for the same dental curing purposes & may also use batteries, especially considering that p.19, lines 12-21 of Kovac (WO) says that other circuits than shown may be used, hence obvious as previously discussed, noting that the pulsed input would inherently have the claimed effect of avoiding heat buildup, thus would have a cumulative effect on preventing decrease in light intensity.

Note in Kovac (WO), in fig.6 (& 3), the option of having the LED (dies) angled analogously to applicant's figures 34c & 31a, is taught, instead of the other alternative of sending the output from the LED's through a light pipe, whose end outputs the light at a similar angle. This orientation may be what is intended by applicant's claim 20, but that claim is presently too unclear to more specifically treat.

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Alternately, Kennedy et al (5,634,711) have teachings overlapping with Kennedy (238), in that it may also have pulsed output (square wave) from a battery & use in dental curing, but specifies the light is an LED array & has more versatile energy & light output control, that is inclusive of maintaining intensity with mention of "the light energy output level should be maintained at a consistent level over the operable life of the light source" (col.1, lines 46-62, esp.59-62). Also see abstract; figures, esp.3, 5 & 7; col.2, lines 1-47; col.3, lines 29-59; col.4, line 33-col.5, lines 3 & 21-col.6, line 65, esp. col.5, lines 25-30 which note pulsed drive is more efficient for power consumption & produces less heat by-product; col.7, line 20-col.8, line 19, especially noting that ref.# 107(a&b) fed into the LED array is a square wave. Note fig. 7 may be bent at an angle at the tip of the "wand" with respect to the overall length. The reasons for obviousness in combining Kennedy et al (5,634,711)'s input control (& monitoring) is analogous to that for Kennedy (238), except (711) is more closely analogous due to its required use of LED's.

10. Mills et al (WO 99/16136) has LED device teachings that are analogous to those of Kovac (WO), hence it is cited as equivalent thereto. JP 09-181356 is of interest for use of pulse generator & current drive circuit for use with a LED light source, but the abstract does not say if the light output is constant or pulsed, while Young (WO 00/67660) teaches pulsing current to solid state or laser diodes to increase intensity with less heat produced, but produces pulsed light. Also teaching pulsed current to build-up are: Larsen (6,450,941 B1); Melikechi et al (6,468,077 B1); & Vander Jagt et al (6,888,633 B2).

11. Applicant's arguments filed 7/5/05 & discussed above have been fully considered but they are not persuasive.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP 9/11-12/05

A handwritten signature in black ink, appearing to read 'Marianne Padgett', written in a cursive style.

**MARIANNE PADGETT
PRIMARY EXAMINER**